AMS 301
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Set 6

Sec 5.1: 16abc, 30, 36
Sec 5.2: 8, 38, 54
Sec 5.3: 6, 9, 15, 21, 22
Sec 5.4: 2, 3ab, 7, 10, 11, 12, 48

Section 5.1
16.

(a) How many different outcomes are possible when a pair of dice, one red and one white, are rolled two successive times?

Let $R = W = 1, 2, 3, 4, 5, 6$ where R is the set outcomes of rolling the red die and W is of the white die.
Possible outcomes in one roll can be expressed as $R \times W$, and if we take the cardinality, $O = |R \times W| = |R| \times |W| = 6 * 6 = 36$, which is the number of possble outcomes in one roll.
The number of outcomes in two successive rolls will be $O \times O$, and the number of possible outcomes in two rolls is $|O \times O| = 36 * 36 = 1296$.

(b) What is the probability that each die shows the same value on the second roll as on the first roll?

(c) What is the probability that the sum of the two dice is the same on both rolls?